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A REVIEW OF THE ORIENTAL LEAFHOPPER
GENUS *SUDRA* DISTANT

(HOMOPTERA: CICADELLIDAE: HYLICINAE)

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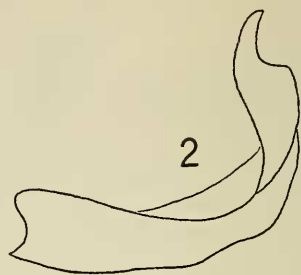
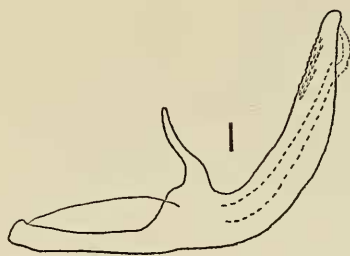
The genus *Sudra* Distant belongs to a group of leafhoppers found exclusively in the Old World tropics. This group has been treated as the family Hylcidae by both Evans (1946: 43-47) and Metcalf (1962: 1-18). The distinctness of this assemblage of leafhoppers is not questioned, but I prefer to consider the group as a subfamily of the Cicadellidae, *sensu lato*.

The hylcines were very thoroughly discussed by Evans (1946: 43-47). He noted that the outstanding general features include a variably produced head, coronally placed ocelli, a large pronotum and scutellum, a flattened abdomen, the occurrence of a sparse covering of scales and hairs on the body and forewings, and a wide corrugated appendix on each forewing which extends around the apex as far as the costal margin. This combination of characters will separate the hylcines from all other cicadellids.

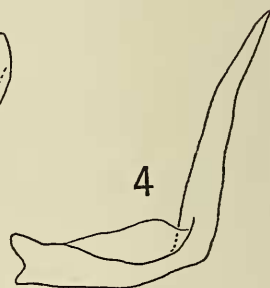
Genus *Sudra* Distant

Sudra Distant 1908: 257 (type-species, *Sudra notanda* Distant).

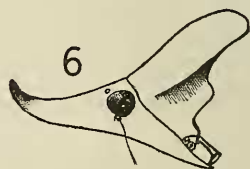
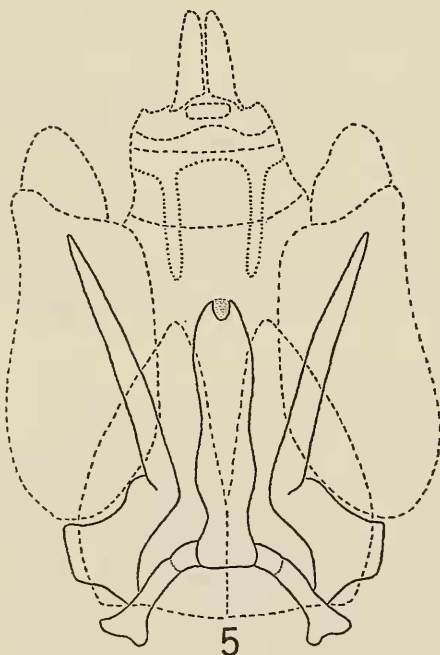
Crown in dorsal view strongly produced beyond eyes, narrowing toward the rounded apex, ocelli near anterior inner margin of eyes; crown in lateral view straight or variably upturned at extreme apex. Pronotum convex, narrowest anteriorly, and with hind margin indented at middle. Scutellum exceptionally long, longer than either its width at base or pronotal length at middle, and acute apically. Forewings long and coriaceous. Entire body and forewings covered with a vestiture of somewhat flattened, elongated, scalelike setae. Prothoracic tibiae compressed and expanded.



notanda



manorga



insularis

Male genitalia: Genital capsule comparatively small, valve lacking, subtriangular plates short and rounded laterally with a moderate number of randomly arranged setae on discal portion, posterior margin of pygofer indented with 2-5 short spined teeth along edge, pygofer laterally setose, anterior ventral margin of pygofer consisting of widened basal portion of concealed style, anal tube large and well developed, connective consisting of two arms (together irregularly U-shaped), simple aedeagus prolonged basally and upturned distally with a notch apically.

Female genitalia: Pregenital sternum large and longer than the two preceding segments together. As in the male, posterior margin of pygofer indented with 2-5 short spined teeth along edge.

Distribution: *Sudra* is limited to the Oriental Region.

KEY TO THE SPECIES OF *Sudra**

1. Males 2
Females 3
2. Scutellar apex reaching or slightly exceeding claval apices; style hooked distally (Fig. 2) *notanda* Distant
Scutellar apex falling far short of claval apices; style not hooked distally (Fig. 4) *manorga* Kramer, n. sp.
3. Length of crown and pronotum about equal, both measured at middle *insularis* Schmidt
Length of crown shorter than length of pronotum, both measured at middle *notanda* Distant

* The female of *manorga* and the male of *insularis* are unknown.

Sudra notanda Distant

(Figs. 1 and 2)

Sudra notanda Distant 1908: 257-258, Fig. 164.

Length: Male 13, female 15-16 mm.

Coloration: General ground color castaneous-brown. Spines of hind legs black. Extreme apex of head irregularly black. Setal vestiture sordid white to dark brown, arranged to form vague longitudinal stripes on pronotum. Vestiture of forewing mainly dark but with ill-defined light patch near base and a larger patch near scutellar apex. Scutellum sordid yellowish subapically. Dorsum of abdomen with a pair of large irregular yellow spots on segments 5 and 6.

Structure: Scutellum very long, slender, pointed apically, and attaining claval apices, sublaterally longitudinally ridged on both sides from base for about one-half length, centrally carinated longitudinally on slightly more than distal one-half.

FIGS. 1-6. *Sudra notanda* Distant: 1, lateral view of aedeagus; 2, lateral view of style. *Sudra manorga* Kramer, n. sp.: 3, lateral view of connective and aedeagus; 4, lateral view of style; 5, ventral view of male genital capsule. *Sudra insularis* Schmidt: 6, lateral view of head.

Male genitalia: Posterior margin of pygofer with 4 or 5 stout spines along edge. Aedeagus in ventral view somewhat bulbous apically with gonopore large and below the apex. Aedeagus in lateral view with some fine sharp scales dorsally near narrowed apex (Fig. 1). Style in lateral view partially folded and in distal one-half upturned with apex hooked (Fig. 2).

Female genitalia: Pregenital sternum with posterior margin subtruncated and very slightly notched at middle.

Specimens examined: One male, Thailand (no other data), in collection of U. S. National Museum, and one female, Lashio, Upper Burma, 3,000 ft., 23-24 Aug. 1914, Fletcher, in collection of British Museum (Natural History).

Discussion: Together with the original description of *Sudra notanda*, Distant published an excellent dorsal habitus illustration (see citation above). However, his illustration of the crown in lateral view seems to exaggerate the apical recurvature which, judging by the specimens available for study, is more nearly straight.

Dr. W. E. China of the British Museum very kindly compared the USNM male from Thailand with the only other known male from Haut Mekong, Pou Hai Katoui, Indochina, in their collection. He noted that in the Indochinese specimen the aedeagus was shorter and the posterior margin of the pygofer had five spined teeth versus a longer aedeagus and the posterior margin of the pygofer with four teeth in the Siamese specimen. These differences, we believe, are intraspecific variation.

Sudra notanda is now known from Burma, Thailand, and Indochina.

Sudra manorga Kramer, new species

(Figs. 3-5)

Length: Male 12 mm.

Coloration: Similar to *notanda* but darker. Clypeus and clypellus mainly black, entire dorsum including forewings very dark red-brown to black, vague ill-defined semi-hyaline patch on costal margin of each forewing in area near scutellar apex, setal vestiture dark golden-brown. Dorsum of abdomen with one pair of large irregular yellow spots on segment 5. Differs also from *notanda* in not having the extreme apex of head irregularly black and in not having bicolored pronotal setae.

Structure: Nearly identical with *notanda* except for the shorter scutellum. Scutellum neither ridged, carinated, nor reaching claval apices, but distinctly flattened apically, and its length slightly more than one-half claval length.

Male genitalia: Posterior margin of pygofer with 2-4 stout spines along edge. Aedeagus in ventral view similar to that of *notanda* but shorter. Genital capsule and concealed structures ventrally as in Fig. 5. Aedeagus and connective in lateral view similar to those of *notanda*, but aedeagus

not narrowed apically (Fig. 3). Style in lateral view upturned distally with apex pointed and elongated (Fig. 4).

Female genitalia: Female unknown.

Type: Holotype male (USNM Type No. 66871), Manorg, W. Borneo, F. Muir.

Discussion: *Sudra manorga* is very distinct from both *notanda* and *insularis* on the basis of the darker coloration and the much shorter scutellum. The styles of *notanda* and *manorga* are very different as noted in the key to species.

Sudra insularis Schmidt

(Fig. 6)

Sudra insularis Schmidt 1920: 117.

Length: Female 18 mm.

Coloration: Not distinguishable from that of *notanda*.

Structure: Differing from *notanda* only in having the crown slightly larger and more distinctly upturned apically (Fig. 6).

Male genitalia: Male unknown.

Female genitalia: Not distinguishable from that of *notanda*.

Specimen examined: Holotype female, Ober-Langkat, Deli, Sumatra, 1894.

Discussion: It is not at all certain that *insularis* is, in fact, distinct from *notanda*. In the original description Schmidt noted the differences in the apical coronal recurvature and slightly larger size. He believed that the striped pattern formed by the setal vestiture on the pronotum was unique to *insularis*; this character is shared by *notanda*. More specimens, particularly males, are needed to resolve this problem.

The unique holotype female was generously made available for study through the courtesy and splendid cooperation of Dr. K. K. Günther and the Humboldt Museum in Berlin, Germany.

LITERATURE CITED

- DISTANT, W. L. 1908. Rhynchota-Homoptera. The fauna of British India including Ceylon and Burma, 4: 1-501.
- EVANS, J. W. 1946. A natural classification of leaf-hoppers (Homoptera, Jassoidea); Part 2: Aetalionidae, Hylcidae, Eury-melidae. Trans. Royal Ent. Soc. London, 97 (2): 39-54.
- METCALF, Z. P. 1962. General catalogue of the Homoptera, Fasc. VI, Part 2, Hylcidae. Published by the U. S. Department of Agriculture. 1-18.
- SCHMIDT, E. 1920. Beiträge zur Kenntnis aussereuropäischer Zikaden (Rhynchota, Homoptera), XIV, Zur Kenntnis der Tribus Sudrini. Arch. Nat., 85: 116-120.